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Modified spline-based path planning for autonomous ground vehicle

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Abstract

© 2017 by SCITEPRESS - Science and Technology Publications, Lda. All Rights Reserved. Potential function based methods play significant role in global and local path planning. While these methods are characterized with good reactive behavior and implementation simplicity, they suffer from a well-known problem of getting stuck in local minima of a navigation function. In this article we propose a modification of our original spline-based path planning algorithm for a mobile robot navigation, which succeeds to solve local minima problem and adds additional criteria of start and target points visibility to help optimizing the path selection. We apply a Voronoi graph based path as an input for iterative multi criteria optimization algorithm. The algorithm was implemented in Matlab environment and simulation results demonstrate that we succeeded to overcome our original algorithm pitfalls.

Keywords

Mobile robot, Path planning, Potential field, Voronoi diagram

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